

QUARTERLY FOCUS

1996 NATURAL GAS IMPORT/EXPORT TRADE: A SECOND LOOK

The Focus feature that was included in the fourth quarter 1996 *Quarterly Report of Natural Gas Imports and Exports* (“*Report*”) provided an overview of natural gas import/export activity for calendar 1996. This Focus feature, like the one found in the *Report* issued for the first quarter of 1996, provides more detailed information pertaining to 1996 cross-border natural gas pipeline trade between the United States, Canada and Mexico. Specifically, this Focus provides additional information on market shares, prices, specific identities of major importers and exporters, as well as updated information on Canadian natural gas sales to its largest state market, California.

1996 Natural Gas Trade with Canada

During 1996, there were a total of 201 importers of Canadian natural gas; this is an increase of ten over last year’s figure of 191. These 201 importers brought into the United States a record volume of 2,883 billion cubic feet (Bcf) of natural gas during the year. This represented an increase of 67 Bcf, or a 2.4 percent over the 1995 total of 2,816 Bcf. Canadian natural gas exports to the United States have increased every year over the past decade (1987 - 1996). Although Canadian gas supplies were competitively priced and demand for natural gas continued to increase in the United States during 1996, the rate of growth for Canadian gas imports was the lowest in ten years. The increase in Canadian gas imports abated somewhat in 1996 due in large part to the lack of sufficient pipeline capacity into the United States. Notwithstanding pipeline constraints, the greatest areas of growth for Canadian gas supplies in 1996 occurred in the Pacific Northwest and the Mid-Atlantic States.

With regard to U.S. natural gas exports to Canada during 1996, there were a total of 21 firms making sales of 61.4 Bcf of natural gas to Canada at an average price of \$2.78 per MMBtu. Exports to

Canada in 1996 increased by 110 percent over the 1995 level of 29.2 Bcf. All of the natural gas export transactions were accomplished under the Department of Energy’s (DOE) two-year “blanket” export authorizations (for gas sales contracts of two years or less). Like previous years, most of the natural gas exports to Canada occurred at the Michigan exit points of Detroit (30.4 Bcf) and St. Clair (19.3 Bcf). These two exit points accounted for 81 percent of all natural gas exports to Canada during the year. [The 1996 natural gas exports of 61.3 Bcf reflect exports to Canada on an equity (sales) basis rather than on a custody (physical movements) basis; total gas exports on a **custody only basis** equaled 51.9 Bcf for the year.]

The weighted average international border price of Canadian natural gas imported into the United States during 1996 was \$1.92 per million British thermal unit (MMBtu). This represented an increase of 32 percent over last year’s average price of \$1.45 per MMBtu. However, putting these figures into perspective, last year’s prices were at a record low and the 1994 average price for Canadian gas supplies was \$1.80 per MMBtu. Under DOE’s two-year “blanket” import authorizations (for gas purchase contracts of two years or less), the average border price of gas supplies imported from Canada in 1996 was \$1.63 per MMBtu. This price represented an increase of over 40 percent over last year’s average price of \$1.16 per MMBtu for short-term Canadian imports. Under DOE’s long-term import authorizations (for gas purchase contracts longer than two years), the average border price was \$2.21 per MMBtu, or an increase of 26 percent over last year’s average price of \$1.75 per MMBtu.

Of the 2,883 Bcf of Canadian gas imported in 1996, 50.3 percent (1,451 Bcf) was imported under DOE’s short-term import authority, while 49.7 percent (1,432 Bcf) was imported under its long-term authority. 1996 represented the second straight year in which more Canadian natural gas was imported

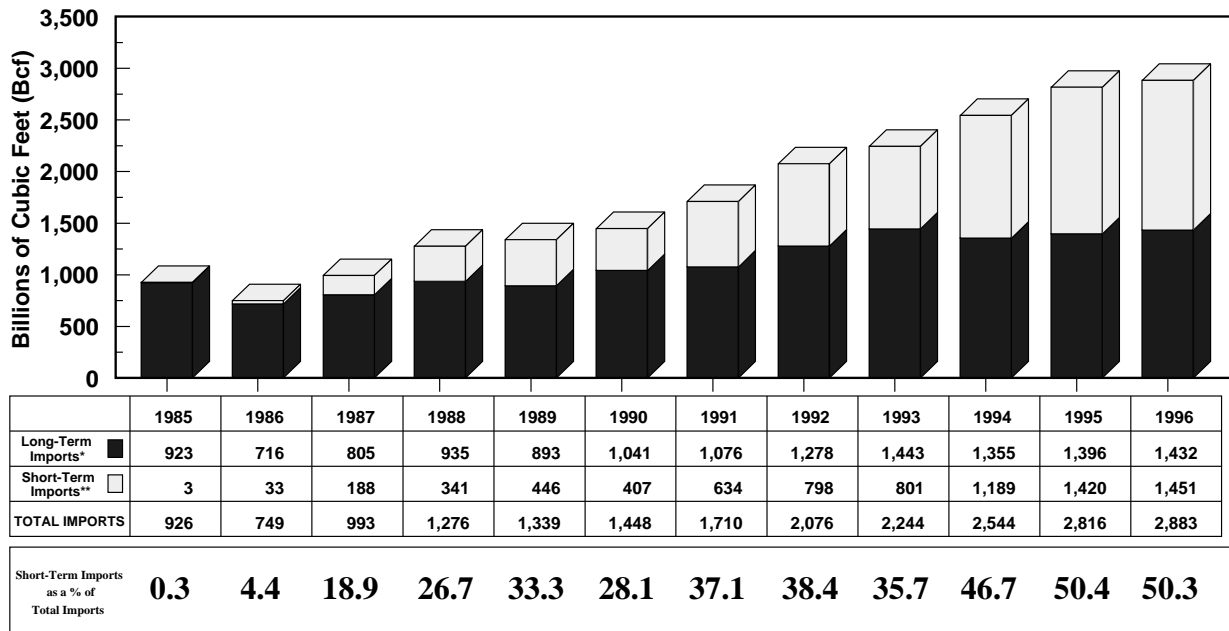
under DOE's short-term import authorizations than under its long-term import authorizations. Comparing 1996 Canadian imports with 1995 imports by type of DOE authorization used, there virtually was no change. **Figure 1** below illustrates the steady growth in the use of short-term import authorizations over the past 12 years (1985-1996). Canadian gas imports under long-term authorizations have remained relatively stable over the past three years, thanks largely to the growth in long-term sales to the non-utility generation sector (NUGS). For example, in 1996 nine new long-term supply contracts serving the NUGS were activated; the volumes imported under these contracts represented almost half of the incremental growth in long-term Canadian imports during the year.

Much of the growth in the use of short-term import authorizations as shown in **Figure 1**, particularly in 1994 and 1995, is due to changes that occurred in the way Canadian gas is marketed in the state of

California, the largest state market for Canadian gas. In 1996, almost 23 percent of all Canadian natural gas exported to the United States was marketed in California. New policies and regulations implemented by the California Public Utilities Commission (CPUC) and the Federal Energy Regulatory Commission (FERC) during the early 1990's, and the addition of new pipeline capacity serving the State, promoted a more open and competitive gas marketplace. With the implementation of FERC Order 636 and the start-up of the joint pipeline expansion project of Pacific Gas & Electric Company (PG&E) and Pacific Gas Transmission Company (PGT) on November 1, 1993, PGT, the largest importer of Canadian natural gas for over 30 years ceased being an importer and became a transportation-only pipeline. The termination of PGT's long-term gas supply contract resulted in the Canadian gas being sold primarily under short-term contracts rather than under long-term contracts.

Figure 1

CANADIAN NATURAL GAS IMPORTS BY TYPE OF IMPORT AUTHORIZATION 1985 - 1996



* Imports made under gas purchase contracts longer than 2 years.
 ** Imports made under gas purchase contracts which are 2 years or less.

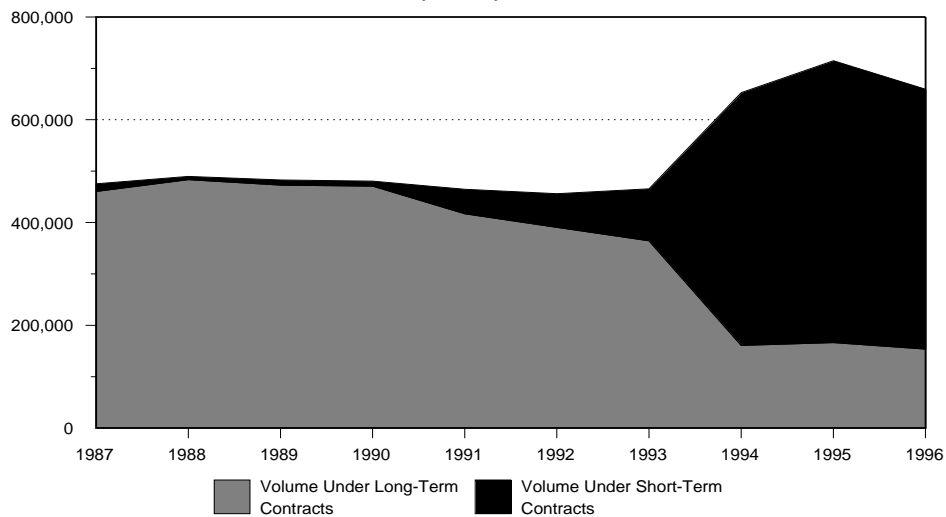
Figure 2 shows the volume of Canadian natural gas marketed in California under both short-term and long-term contracts during the past ten years (1987 - 1996). As noted above, prior to November 1993, most Canadian gas sales were sold in California under long-term contracts; subsequently, most Canadian gas sales have been made under short-term contracts. During 1996, 659.4 Bcf of Canadian natural gas was marketed in California. Almost 77 percent of the volume marketed in the state during the year was purchased under short-term contracts at an average international border price of \$1.13 per MMBtu. The remaining 23 percent of the Canadian gas volumes was marketed under long-term contracts at an average international border price of \$1.25 per MMBtu.

Based on preliminary figures published by the Energy Information Administration (EIA) in its *Natural Gas Monthly* [DOE/EIA-130 (April 1997), Tables 14-18], total natural gas deliveries to California in 1996 declined by 132.5 Bcf, or 7.2 percent from the 1995 level (1707.2 v. 1839.7 Bcf). The 1996 decline in natural gas deliveries in the state of California follows on the heels of a significant decline in 1995 compared with the 1994 level. Over the past two years, natural gas deliveries in California have plunged 334.3 Bcf, or 16.4 percent.

Approximately 85 percent of the overall drop in natural gas deliveries during the past two years was directly the result of reduced demand for natural gas in the electric utility sector. Natural gas deliveries to electric utilities declined 34 and 19 percent in 1995 and 1996, respectively. This large decline in natural gas use in the electric utility sector was the result of power plants in California relying on the increased availability of less expensive hydroelectric generation due to the unusually heavy rains and snows in the Pacific Northwest and California over the past couple of years. Additional reductions in gas demand in this sector also may have been caused by the removal from service of smaller and older fossil plants by certain California utilities.

Consistent with the general decline in natural gas deliveries in California during 1996, Canadian natural gas supplies marketed in California, as shown in **Figure 2**, also dropped by 55.3 Bcf, or 7.7 percent from the 1995 level. On a percentage basis, Canadian long-term and short-term imports declined by about the same amount. Long-term imports declined by 7.8 percent in 1996 and short-term imports declined by 7.6 percent. Short-term imports declined from 548.3 Bcf in 1995 to 505.7 Bcf in 1996, while long-term imports declined from 166.4 Bcf in 1995 to 153.7 Bcf in 1996.

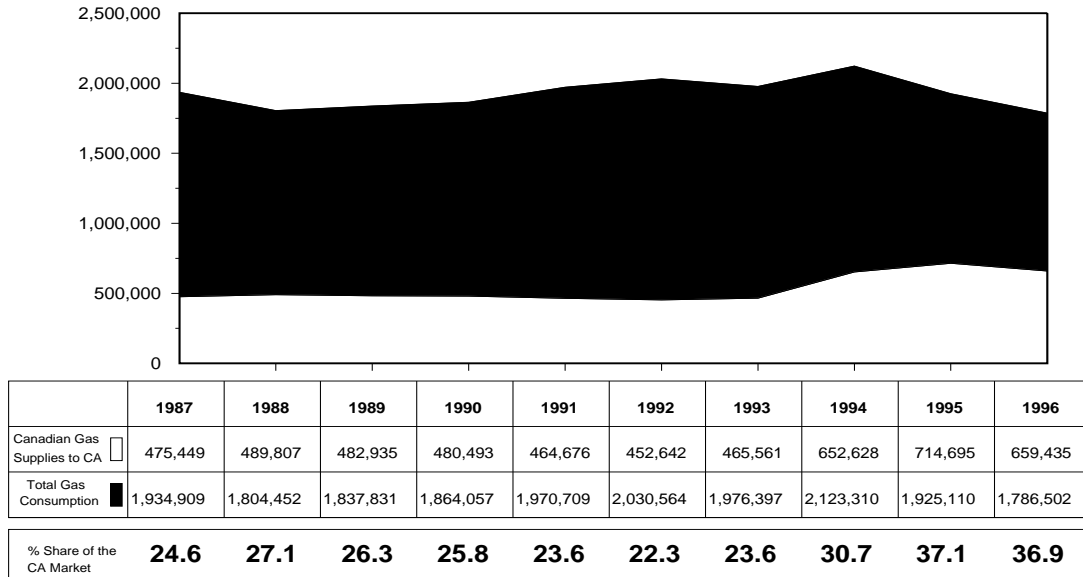
Figure 2
CANADIAN NATURAL GAS EXPORTS TO CALIFORNIA UNDER LONG-TERM AND SHORT-TERM CONTRACTS OVER THE PAST TEN YEARS: 1987 - 1996
(MMCF)



Notes: Long-term contracts are defined as supply contracts which are over two years in length and short-term contracts are defined as supply contracts which are two years or less in duration. The data are from filings submitted by natural gas importers to the Office of Fossil Energy.

Figure 3 shows Canadian natural gas marketed in California as a percentage of total gas consumption for the state during the past ten years (1987 - 1996). This figure merely displays the growth in market shares for Canadian gas in California during this time period. With the advent of a more competitive marketplace and increased pipeline capacity serving the state, the market share for Canadian gas has grown from 24.6 percent in 1987 to approximately 37 percent in 1995 and 1996.

Figure 3
CANADIAN NATURAL GAS MARKETED IN CALIFORNIA AS A PERCENTAGE OF TOTAL STATE GAS CONSUMPTION (MMCF)



Sources: Consumption data for 1987 thru 1995 obtained from the *Natural Gas Annual* (DOE/EIA-0131); 1996 consumption figure is an FE estimate based on preliminary EIA data. Canadian natural gas supplies marketed in California are from reports filed by importers with FE.

Figure 4 lists the top ten importers of Canadian natural gas for the year. These ten firms imported a total of 1193.9 Bcf of natural gas, or over 41 percent of the total Canadian gas imported for the year. **Figure 4** also indicates whether the imports were made under short-term or long-term import authorizations. About 55 percent of the volumes imported by this group of importers was done under DOE's short-term import authority and 45 percent was under long-term import authority. Eight out of the top ten Canadian natural gas imports listed in 1995 were also among the top ten listed for 1996. The only year-to-year changes consisted of Coastal Gas Marketing Company and Washington Natural Gas Company replacing Mobil Natural Gas Inc., and Enron Capital & Trade Resources Corporation from the list. Among the top importers in 1996, there were only three end-users: a local gas distributor, a combined electric/gas utility and an electric utility; the rest of the importers were marketers, producer affiliates, or gas aggregators.

Figure 4
TEN LARGEST IMPORTERS OF CANADIAN NATURAL GAS IN 1996

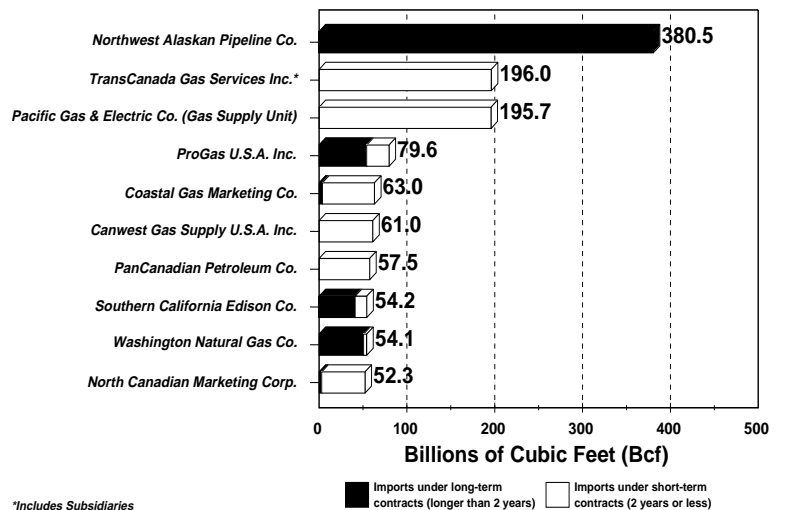
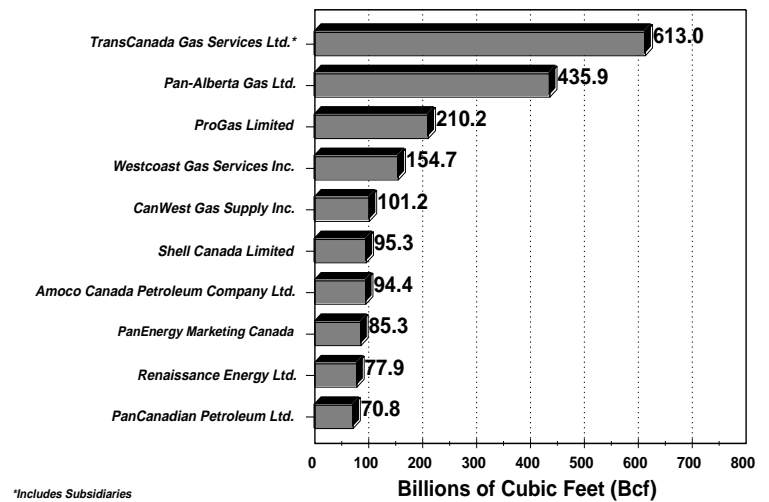


Figure 5 lists the ten largest suppliers of Canadian natural gas to the United States in 1996. The volumes supplied by each company include both short-term and long-term sales. Eight out of ten of these suppliers were also on the list of top gas suppliers for 1995; however, Pan Energy Marketing Canada and PanCanadian Petroleum Ltd., replaced Enron Capital & Trade Resources Canada and Mobil Natural Gas Canada in 1996. This list of gas suppliers also does not reflect some recent marketing alliances and mergers of certain companies, e.g., Coastal and Westcoast Gas. Most of these marketing alliances occurred in late 1996, or the early part of 1997. As shown, most of the top suppliers of Canadian natural gas to the United States in 1996 were gas aggregators. The top ten suppliers of Canadian natural gas listed in **Figure 5** supplied slightly over 67 percent of all Canadian gas imports during 1996 (1938.7 Bcf); in comparison, during 1995 the ten largest suppliers marketed almost 64 percent of all Canadian gas going to the United States.

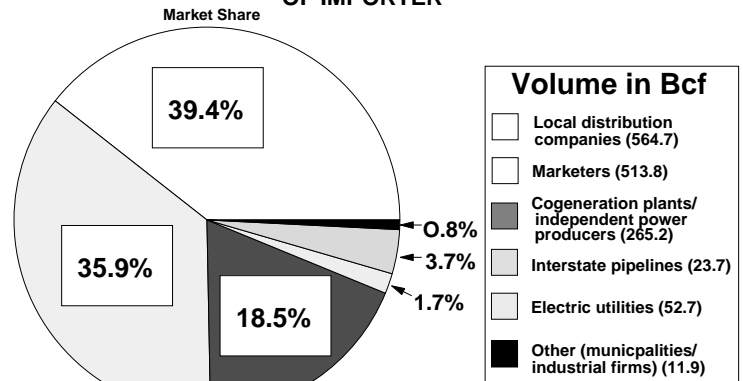
Figure 5

TEN LARGEST SUPPLIERS OF CANADIAN NATURAL GAS IN 1996



The next three graphs provide information pertaining to Canadian natural gas imports made in 1996 under long-term import authorizations. **Figure 6** indicates what type of importer was purchasing Canadian natural gas under long-term purchase contracts. The figure shows, by type of importer, the actual volumes imported and percentage of market share. Like 1995, local gas distribution companies (LDCs) and natural gas marketers continue to import the largest shares of Canadian natural gas under long-term contracts, 39.4 percent and 35.9 percent, respectively. For the most part, the volumes being imported today by LDCs and marketers have replaced those volumes imported by interstate pipelines in the past. Comparing the market share breakdown in 1996 with 1995, market shares in 1996 increased for LDCs, marketers, non-utility generation sector (NUGS), and municipalities/industrial customers, but declined for electric utilities and interstate pipelines. On a percentage basis, both marketers and NUGS showed over an 8 percent increase in the volumes they imported in 1996 over their 1995 levels.

Figure 6 **1996 CANADIAN NATURAL GAS IMPORTS UNDER LONG-TERM IMPORT AUTHORIZATIONS BY TYPE OF IMPORTER**



Notes:

Long-term Canadian gas imports totaled 1,432 Bcf in 1996. Imports by Northwest Alaskan Pipeline Company were included in the "marketers" category; imports by combined gas/electric utilities were included in the "local distribution companies" category.

Figure 7 on the following page illustrates the differences in average commodity prices paid by the various types of long-term importer for 1995 and

1996. In 1996, the average commodity price paid by **all** importers of Canadian natural gas under long-term contracts was \$1.70 per MMBtu. This price is \$0.50/MMBtu, or 41.7 percent higher than last year's average price of \$1.20 per MMBtu. The average commodity price increase shown for **all** Canadian long-term imports tracks closely with the increases experienced in 1996 for average domestic wellhead prices. In 1996, natural gas wellhead

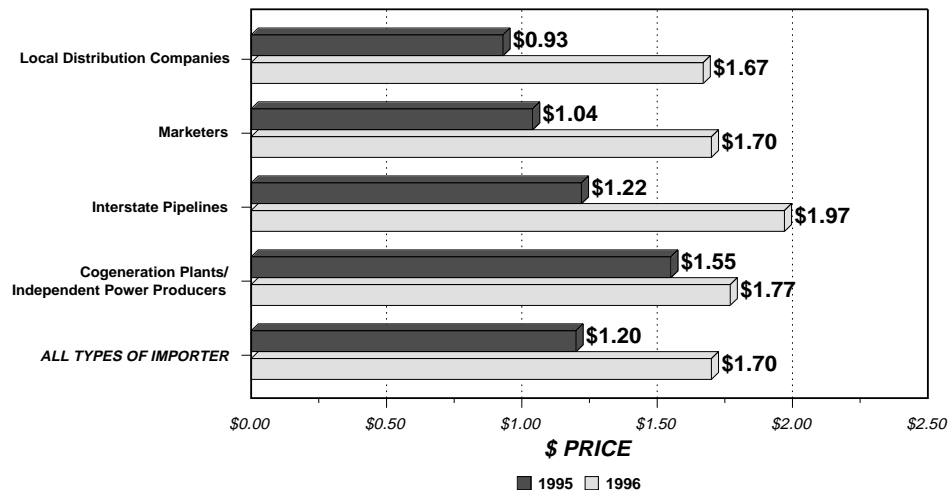
prices rose to \$2.25 per thousand cubic feet (Mcf). The EIA indicated that the 1996 average wellhead price was 45 percent greater than the \$1.55 recorded in 1995 and, after adjustment for inflation, was the highest level since 1986 [DOE/EIA-130, *Natural Gas Monthly*, May 1997, Table 4, p.12].

Figure 7 shows there were some differences in commodity prices paid among the various types of importer in 1996, but the price differences were not nearly as large as those experienced in 1995. Among the four principal types of importer, only the LDCs, on average, paid less than the aggregate average price paid for the year, while interstate pipelines and NUGS paid more than the aggregate average price. Although the LDCs paid, on average, the lowest commodity price during 1996 (\$1.67/MMBtu), this category of importer had the greatest year-to-year price increase. The 1996 LDC average commodity price represented a 79.6 percent increase over the 1995 average price of \$0.93 per MMBtu. The category of importer which experienced the next largest jump in prices over the 1995 level was marketers. Most of the underlying long-term supply contracts for both the LDCs and marketers have great price elasticity because they track closely to changes

in the natural gas and oil markets. Therefore, the prices under these contracts dropped dramatically during 1995 when oil and gas prices fell, but when the prices of oil and gas climbed in 1996, the price under these contracts followed suit. As shown in **Figure 7**, the NUGS category of importer showed the smallest increase in commodity prices in 1996 compared with 1995. The average commodity price of NUGS went from \$1.55 per MMBtu in 1995 to \$1.77 per MMBtu in 1996, or an annual increase of 14.2 percent. The principal reason why the commodity price for NUGS did not escalate nearly as fast as other importer groups is that most of the underlying contracts are not directly pegged to changes in the oil and natural gas marketplace. Many of the long-term gas supply contracts used by NUGS have fixed annual price adjustments; therefore, many of these contracts were not impacted by the price swings in the oil and gas marketplace experienced in 1996. The average commodity price of \$1.77 per MMBtu paid by the NUGS in 1996 was 4.1 percent above the average aggregate price of \$1.70 per MMBtu paid by **all** importers, while the average price paid by LDCs was 1.8 percent less than the aggregate average price.

Figure 7

THE WEIGHTED AVERAGE COMMODITY PRICE IN 1995 AND 1996 FOR CANADIAN NATURAL GAS IMPORTED UNDER LONG-TERM CONTRACTS BY TYPE OF IMPORTER (\$/MMBtu)



Note: (1) The commodity price for industrial firms and other end-users was \$1.46 and \$2.61/MMBtu, respectively; however, the database in these categories was too small for inclusion in the graph.
 (2) Imports by Northwest Alaskan Pipeline Company that were resold to Pan-Alberta (U.S.) Inc., for markets in the Midwest were not used in calculating the commodity price data because the downstream sales were short-term in nature.

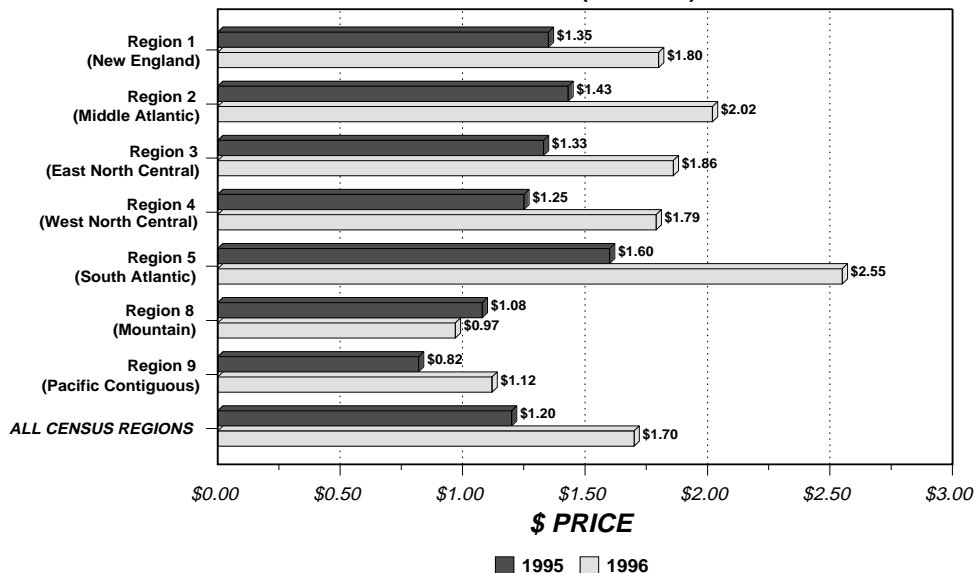
Figure 8 shows the different commodity prices, by Census Region, paid for Canadian natural gas imported under long-term contracts for both 1995 and 1996. It shows that the large differences in commodity prices among the various Census Regions which occurred in 1995 have not disappeared during 1996. In 1996, the areas of the country which continue to experience the least expensive commodity prices are in Census Regions 8 and 9, which cover the Western and Mountain States, with prices ranging from \$0.97 to \$1.12 per MMBtu. However, unlike 1995, this year's commodity prices in the Census Regions representing the rest of the country were found to fall into a fairly close price range. The only exception to this trend is Census Region 5 (South Atlantic); the relatively high average commodity price in this region is influenced by a small database and a distressed NUGS contract. During 1996, the average commodity prices in the Midwestern states (Census Regions 3 & 4) rose marginally higher than those in the New England states (Census Region 1). The New England States average commodity price was favorably affected by NUGS contracts in 1996 as their commodity costs, on average, did not increase as fast as other types of long-term importers.

There continues to be a large difference in Canadian natural gas commodity costs among various parts of the country, as illustrated in **Figure 8**. However, the price dichotomy seems to have gone from a split

between the West Coast and the East Coast in 1995 to more of a price split between the West Coast and the rest of the country in 1996. The relatively small variances in commodity prices among long-term importers in the Midwestern and Eastern states seem more of a function of the type of importer, or contract performance in the regions, rather than the geographical region served. The factors which contributed to less expensive commodity prices in the Western and Mountain States in 1995 went basically unchanged in 1996. First, there currently exists a large surplus of natural gas production in both western Canada and western United States competing for the same western markets, with limited access to Midwestern and Eastern markets. Second, there continues to be a large surplus of natural gas pipeline capacity serving the western markets, particularly to California. Third, the pipeline transportation system used to deliver Canadian natural gas to the California market in Census Region 9 is relatively expensive compared with costs associated with delivering southwest gas to the same market; therefore, the commodity costs must remain lower in order to keep Canadian natural gas competitive in this market. Fourth, competition in the western markets continues to be particularly intense in light of the surplus indigenous supplies and the fact that for the second consecutive year, California experienced a substantial drop in natural gas demand, primarily caused by surplus hydro-electric generation capacity.

Figure 8

THE WEIGHTED AVERAGE COMMODITY PRICE IN 1995 AND 1996 FOR CANADIAN NATURAL GAS IMPORTED UNDER LONG-TERM CONTRACTS BY CENSUS REGION (\$/MMBtu)



The next two graphs provide information on Canadian natural gas imported under DOE's short-term blanket authorizations during 1996. As mentioned earlier, Canadian natural gas imports under this type of import authority have exceeded the volume imported under long-term authority for both 1995 and 1996. **Figure 9** identifies, by class of importer, the market share of those who imported Canadian natural gas in 1996 under short-term import authorizations. As displayed in **Figure 9**, there were three principal types of short-term importer: marketers, LDCs, and Canadian gas producers or their U.S. affiliates. These three types of importer brought in almost 97 percent of the total short-term Canadian natural gas imports in 1996. Comparing the market share breakdown in 1996 with 1995, marketers and industrial firms were the only two categories of short-term importer that experienced growth in market shares during the past year.

Figure 10 shows for 1995 and 1996 the weighted average international border price for Canadian natural gas imported under short-term contracts by Census Region. Almost 99 percent of all short-term Canadian natural gas sales to the United States in 1996 were concentrated in five Census Regions (2,3,4,8,9), with over 53 percent of the volumes marketed in Census Region 9 (Pacific Contiguous). As indicated, the average border price for **all** short-term imports in 1996 was \$1.63 per MMBtu, compared with \$1.16 per MMBtu in 1995; this constitutes an increase of 40.5 percent. There were three Census Regions which showed year-to-year price changes that were below the national average of 40.5 percent: eight (15.7%), nine (25.5%), and one

(38.9%). It's easy to understand why Census Regions 8 (Mountain States) and 9 (Pacific Contiguous States) experienced less than average gas price increases in 1996 due to the indigenous gas supplies and surplus transportation capacity serving these regions, but the lower than average price increase in Census Region 1 (New England States) is less apparent. Although short-term Canadian gas sales to New England in 1996 remained relatively small (13.1 Bcf), the lower than average price increases probably were the result of purchases by the NUGS and increased competition from alternative energy sources, including the increased availability of liquefied natural gas imports.

During 1996, the national average price of \$1.63 per MMBtu for short-term imports was \$0.07 per MMBtu less than the average commodity price paid for imports under long-term contracts (see **Fig. 7**). In 1995, the price differential between the average price for short-term imports and the average commodity price under long-term contracts was \$0.04 per MMBtu. The fact that the average commodity price for long-term contracts tracks so closely to the price under short-term contracts is indicative of how closely the pricing provisions of long-term sales arrangements are tied to the price fluctuations in the marketplace. **Figure 10** also illustrates the price split among the various regions. Like the long-term import prices, as previously shown in **Figure 8**, there is a considerable price dichotomy between the natural gas prices in the Western states (Census Regions 8 & 9) and the rest of the country. Census Region 5 (South Atlantic) showed the highest average natural gas price Canadian supplies during 1996, but the price is skewed due to the small volume of Canadian natural gas (less than 1 Bcf) sold in this region.

Figure 9

1996 CANADIAN NATURAL GAS IMPORTS UNDER SHORT-TERM IMPORT AUTHORIZATIONS BY TYPE OF IMPORTER

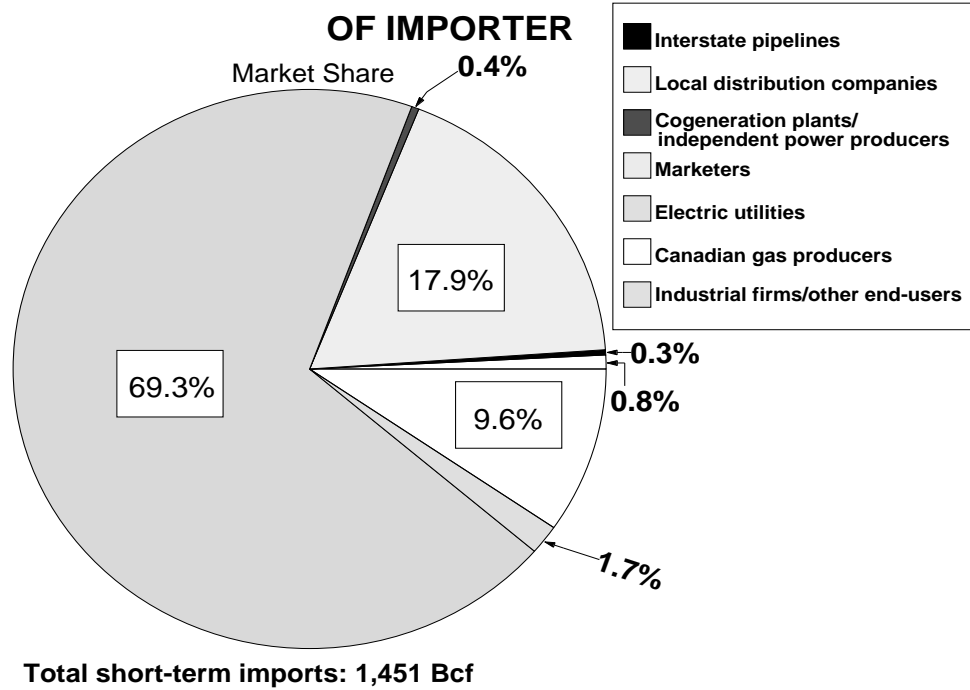
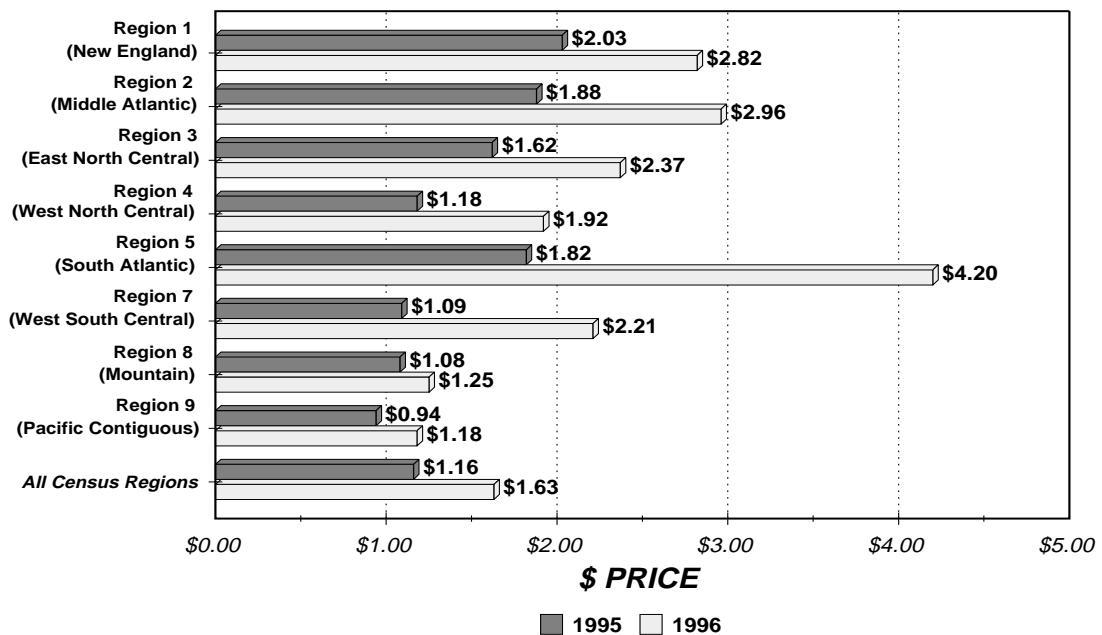


Figure 10 THE WEIGHTED AVERAGE PRICE IN 1995 & 1996 FOR CANADIAN NATURAL GAS IMPORTED UNDER SHORT-TERM CONTRACTS BY CENSUS REGION (\$/MMBtu)



1996 Mexican Gas Trade

The last four graphs provide information on Mexican gas trade during 1996. **Figure 11** identifies the 29 firms that exported a total of 33.8 Bcf of natural gas to Mexico in 1996, and indicates the market share of the six largest exporters. There were a record number of companies exporting natural gas to Mexico in 1996, an increase of 8 over last year's figure of 21 exporters; however, total volumes for 1996 declined by 27.5 Bcf, or 45 percent from the 1995 level. Amoco Energy Trading Corporation continued to be the largest exporter of natural gas to Mexico; however, its market share in 1996 represented only 18 percent of total export volumes as compared to 33 percent in 1995. Although there were a total of 29 exporters in 1996, Amoco and the other top five gas exporters represented about 64 percent of the Mexican import market.

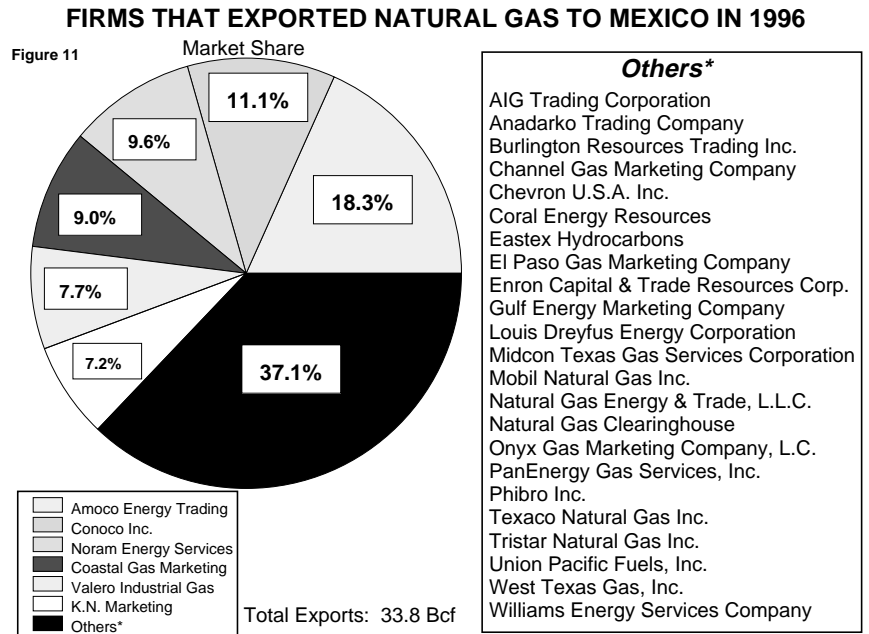
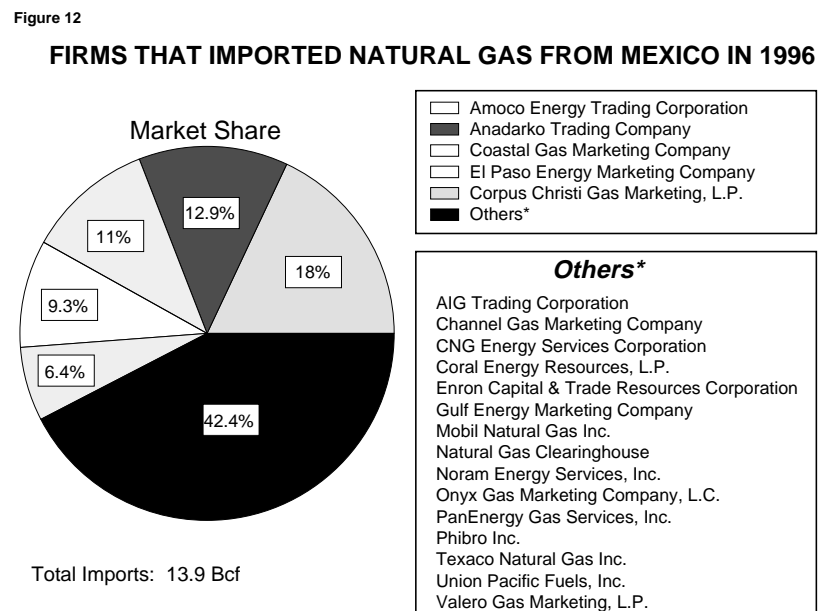


Figure 12 shows the 20 companies that imported a total of 13.9 Bcf of Mexican natural gas into the United States, more than double the 1995 level (6.7 Bcf). The majority of gas (13.6 Bcf) entered the U.S. at Hidalgo, Texas, while the remaining volumes (.3 Bcf) entered the country at Penitas, Texas. The number of companies importing Mexican natural gas this year increased by 8 from last year's figure of 12 importers. Mexican sources predict that exports to the United States will continue to grow in 1997, with total volumes expected to approach the figure for Mexican gas imports from the U.S.



Figures 13 and 14 provide monthly volume and price information with regard to natural gas exports to Mexico over the past five years (January 1992 - December 1996). The monthly weighted average price of natural gas exports to Mexico was at its highest this decade in December 1996, when the price climbed to \$3.68 per MMBtu.

Figure 13

NATURAL GAS EXPORTS TO MEXICO

1992 - 1996

MONTHLY VOLUMES

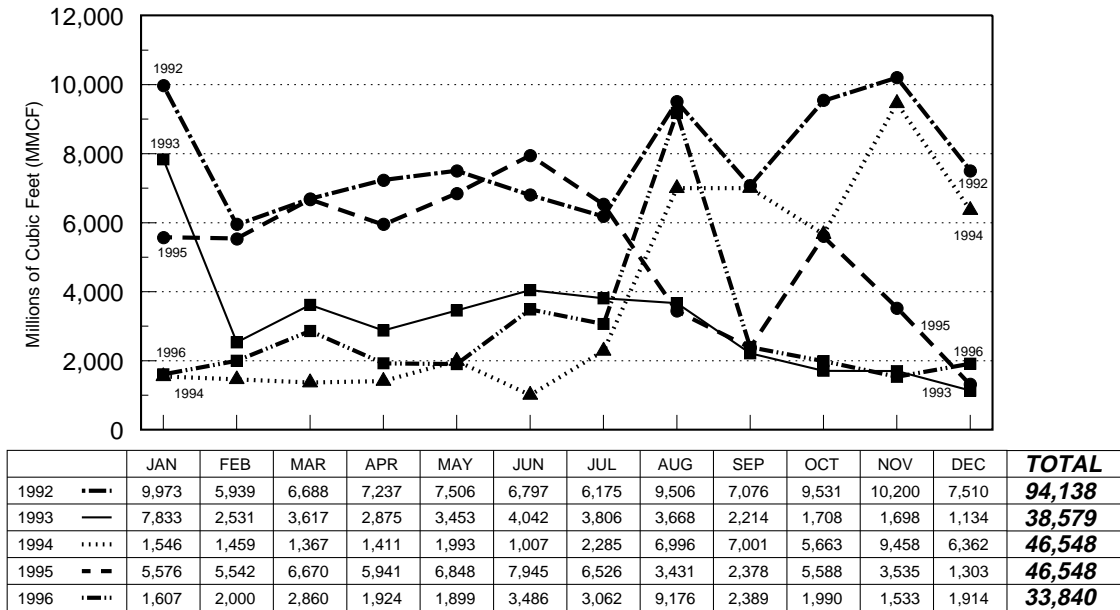


Figure 14

NATURAL GAS EXPORTS TO MEXICO

1992 - 1996

WEIGHTED AVERAGE PRICE

